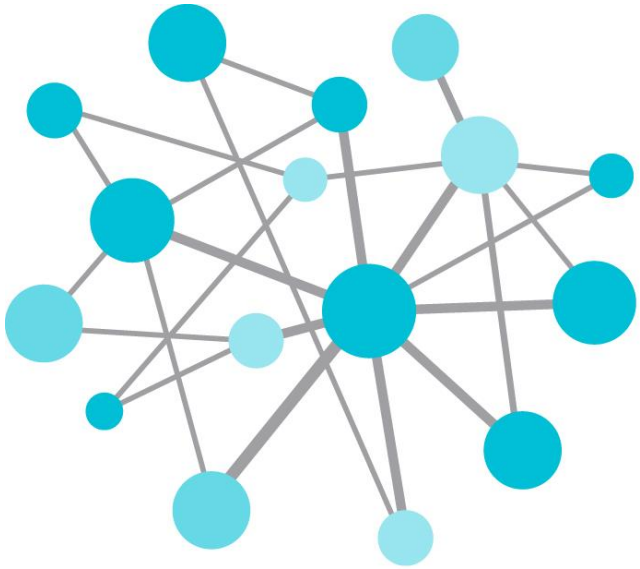


OSIsoft®

REGIONAL SEMINAR 2014

The Power of Data

DECISION READY IN REAL-TIME

Unleash Your Infrastructure

Presented by **Tom Tunnell, Sr. Systems Engineer**
tunnell@osisoft.com

This Session

Unleash your infrastructure for operational excellence with:

- PI Server 2014
  - PI Asset Framework
  - Calculations and analytics
  - PI Event Frames
  - PI Notifications

In Face of the Data Deluge

Hundreds of assets

Thousands of events

More people that need to know

How can you deliver operational excellence?

Unleash the PI System Infrastructure

Process Optimization | Quality Improvement | Asset Health & Uptime | Energy Efficiencies | Regulatory Requirements | Safety

OSIsoft. Infrastructure

Enterprise Infrastructure for Data-Driven Operations

Assets | Assets | Assets | Assets | Assets | Assets

Operational Excellence

to wherever your data needs to go

Operational Intelligence

Wherever your data resides

Operational Excellence Example

Preventing Failures

1. Gather asset data

2. Deploy analysis

3. Isolate problem events

4. Notify

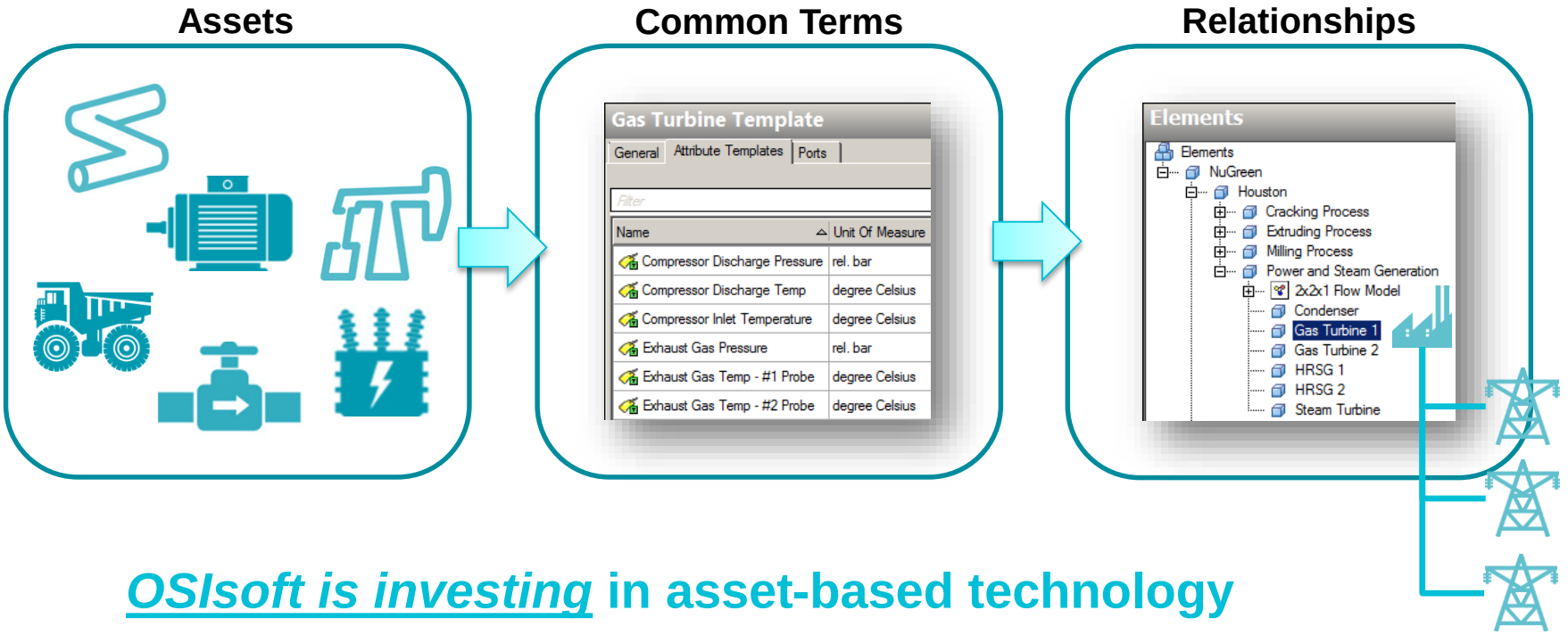
Life Before PI Asset Framework

*"In last couple of years, we started to experience a lot of **failures on this device**.*

***We're not sure why** totally yet […] we've got this problem we don't have a handle on […] it could pop up at any moment, and **we don't have any insight on it**.*

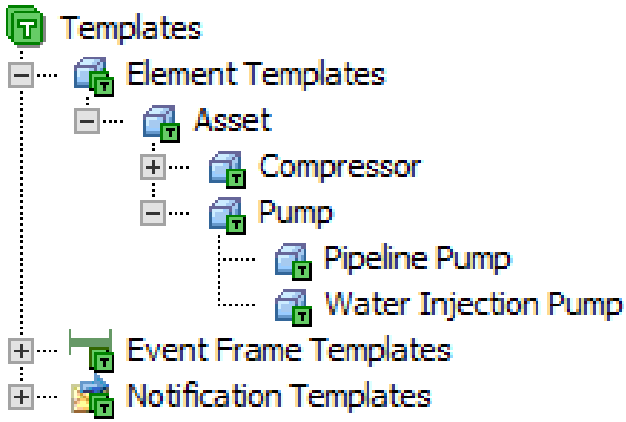
*So I thought **there's got to be a better way**."*

Introducing PI Asset Framework – *Assets in Context*

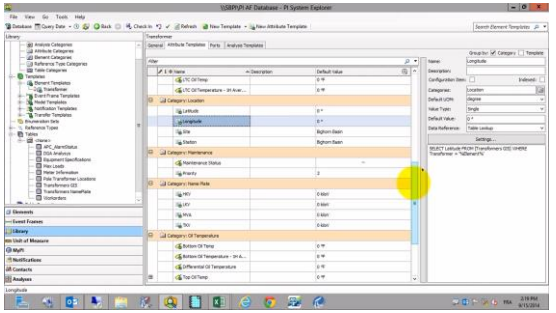


OSIsoft is investing **in asset-based technology**

The Power of Templates



- Reduce **time to deployment**
  - Attributes, KPIs, events, alerts defined
  - Tag creation can be templatized
- Facilitate **asset management**
  - Post-modifications are replicated to all assets
  - Create assets in bulk using the PI Builder (MS Excel)
- Reuse **visualization** screens and reports
  - Element-relative visualization for similar assets



DEMO

Preventing Failures

Step 1. Gather Your Asset Data

*"Started **reviewing failures** from PI data […]*

*Some were immediate, others were **showing a type of signature**; rapidly fluctuating voltage. […]*

*So I started playing with PI […] and thought **there's got to be a way to detect when there's deviation in voltage**."*

Introducing Calculations and Analytics

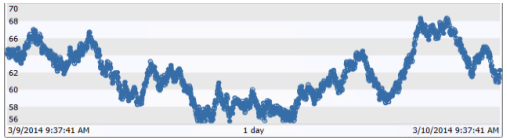
Asset

Analysis

Testing

Execution

PI Tag



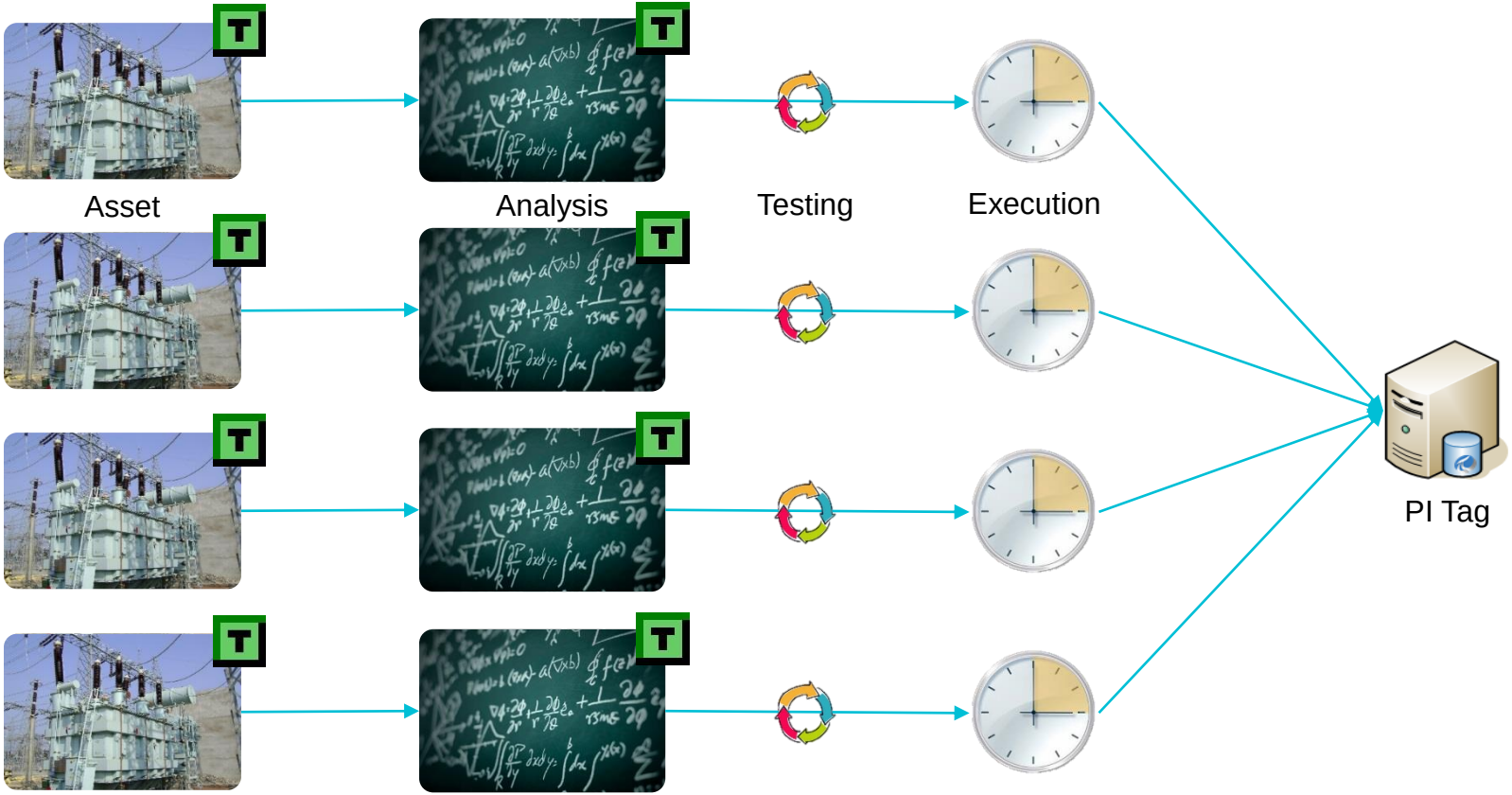
Backfill

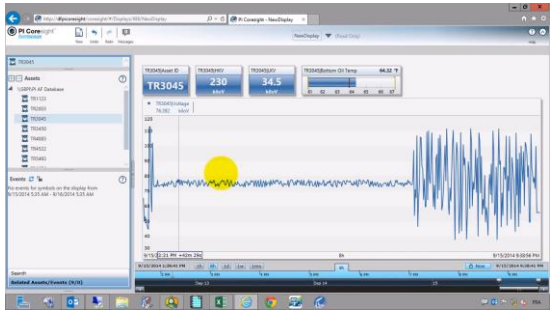
*“So I settled on **standard deviation**.*

*When the voltage is **in the normal mode, std dev stay low** normally, but when we get into rapid fluctuation, **then std dev jumps up**.*

*But now I have the issue, **we have 255 of these, how do we do it?**”*

Calculations and Analytics Continued





DEMO

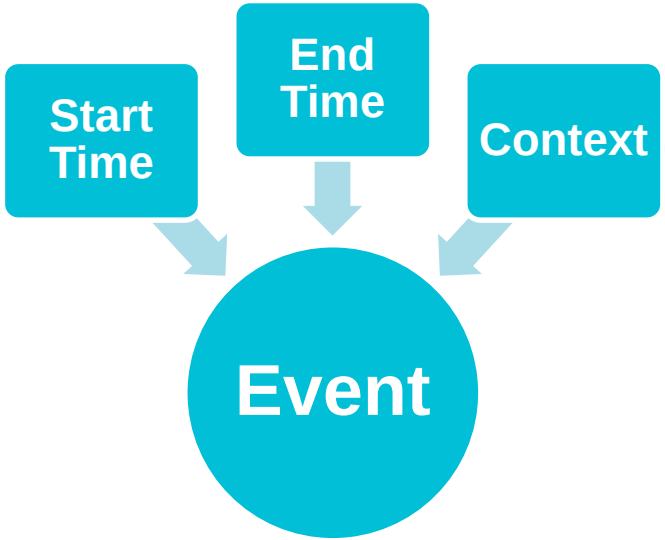
Preventing Failures

Step 2. Deploy Your Analysis

*“Within a span of **slightly under 2 weeks**, we had a **diagnostic system deployed** across 255 transformers.*

*Give me a **weekly summary** of which […] were in alarm, and then detailed alert on **when they went into alarm**.”*

Introducing PI Event Frames



Referenced Elements	Name
	OW-206
	OW-207

Name	Value
Category: General Info	
Comment	
Operator	Bobby Wolf
Phase	Dwell
Type	LOW TEMP
Category: Limits	
Temp.Limit.High	88 deg C
Temp.Limit.Low	70 deg C
Category: Manual Logger	
Comment	
Category: Process Parameters	
Level.Start	42.7438011169434 L
Temp.End	71.1539001464844 deg C
Temp.Max	71.1538998921712 deg C
Temp.Min	62.1662445068359 deg C
Temp.Range	8.98765538533529 deg C
Temp.Start	62.1662445068359 deg C

Asset(s) associated to the event

Text entries useful for filtering/group-by analysis

Placeholders for **manual data entry**

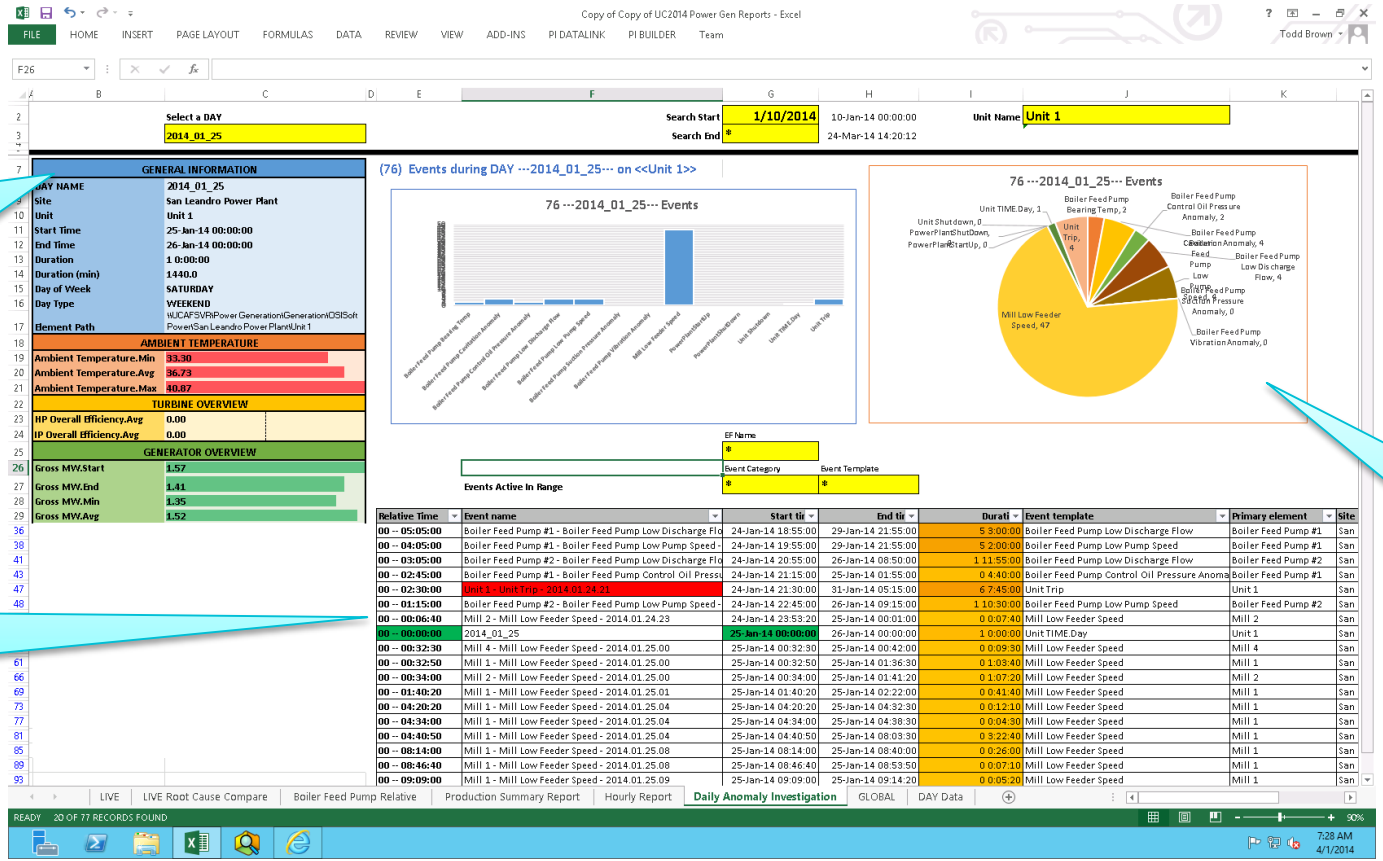
Calculated data using event start & end time context

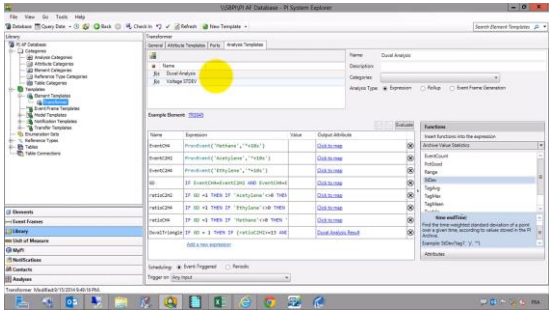
Weekly Failure Report Example

Weekly Data

Failure Events

Excel Charting





DEMO

Preventing Failures

Step 3. Isolate Problem Events

*“If we detect it, then **notifications** were sent, primarily to the department that I’m in, and we try to validate the data as quickly as we can [...]”*

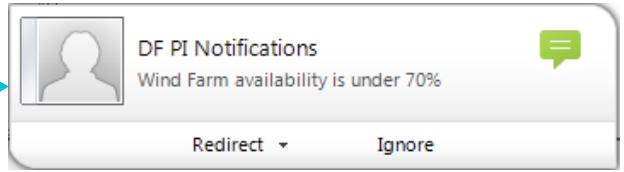
Introducing PI Notifications

PI Notifications

From: PINotAdmin
To: Mariana Sandin
Cc:
Subject: Transformer TR0842 Load is in high alarm

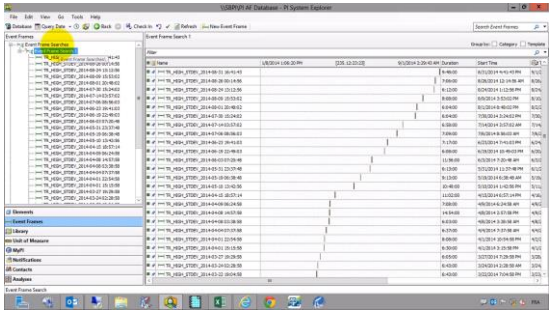
Instant PI WebParts Trend
Acknowledge With Comment
Acknowledge

Name:	Transformer Load - High TR0842
State:	High
Trigger Time:	7/29/2012 9:07:01 AM Pacific Daylight Time (GMT-07:00:00)
Start Time:	7/29/2012 9:07:01 AM Pacific Daylight Time (GMT-07:00:00)
End Time:	1/1/1970 12:00:00 AM Pacific Standard Time (GMT-08:00:00)
Triggering Condition:	Load > 22
Target:	TR0842



Web Service

Maintenance System



DEMO

Preventing Failures

Step 4. Notify

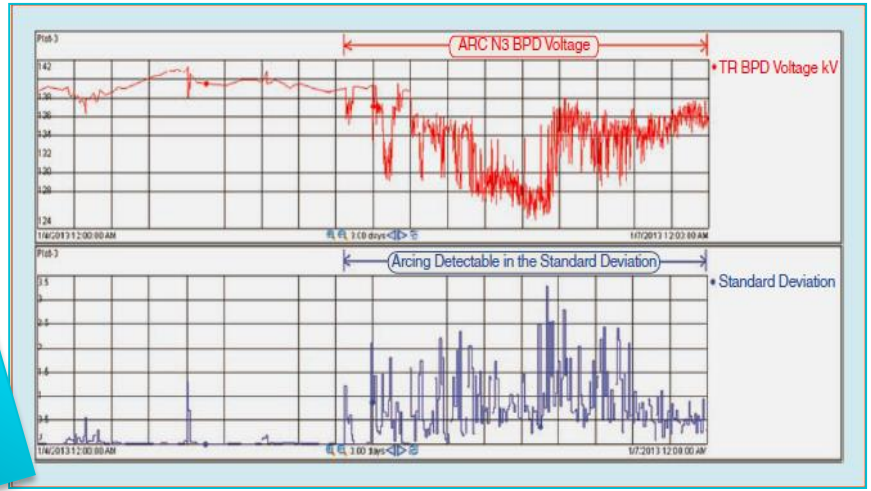
ComEd's Story Unleashed…

Identify Pre-cursor Trends → Build a Sandbox to Identify the Condition → Analyze the Results → Automate and Improve

Need:
Identify failing bushing pot devices by detecting erratic voltage across electric 255 transformers

From: PI-ACE.BushingPotDeviceNotification.norepl
To: ⊞ ComEd Bushing Pot Alarm Notificatio
Cc:
Subject: Bushing Pot Device Alarm - 38TR76 BK

```
38TR76      BKV = 135.5
38TR76        M = CLOSED-METER
Start Time: 12/13/2013 6:10:00 AM
3 day Stdev = 3.772986
10 min Stdev values for the past hour:
12/13/2013 6:00:00 AM to 12/13/2013 6:10:00 AM = 0.042971
12/13/2013 5:50:00 AM to 12/13/2013 6:00:00 AM = 0.043006
12/13/2013 5:40:00 AM to 12/13/2013 5:50:00 AM = 1.120646
12/13/2013 5:30:00 AM to 12/13/2013 5:40:00 AM = 4.730449
12/13/2013 5:20:00 AM to 12/13/2013 5:30:00 AM = 7.349881
12/13/2013 5:10:00 AM to 12/13/2013 5:20:00 AM = 5.998719
```

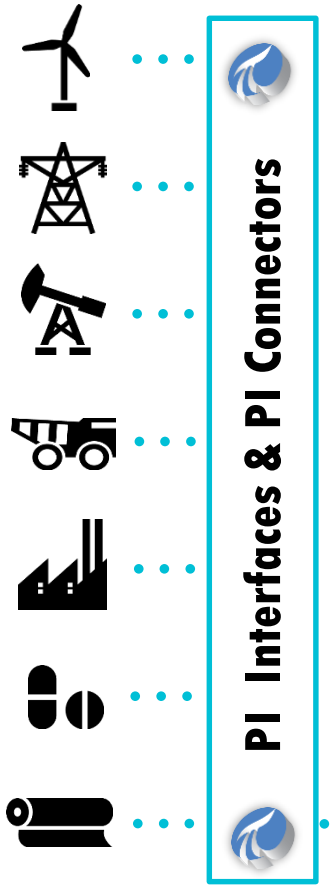


Operation Intelligence:
Prevented several transformer outages by notifying Engineers in time

Trusting the Data: Analytics and Visualization

John Juna
ComEd

PI System Infrastructure



PI Interfaces & PI Connectors

PI Notifications

PI Event Frames

Analytics

PI AF

PI Data Archive

PI Server

PI System Access

Line of Business Systems

PI Cloud Services

PI Cloud Connect

PI Integrators

esri ArcGIS

PI Visualization

PI Manual Logger

PI Coresight

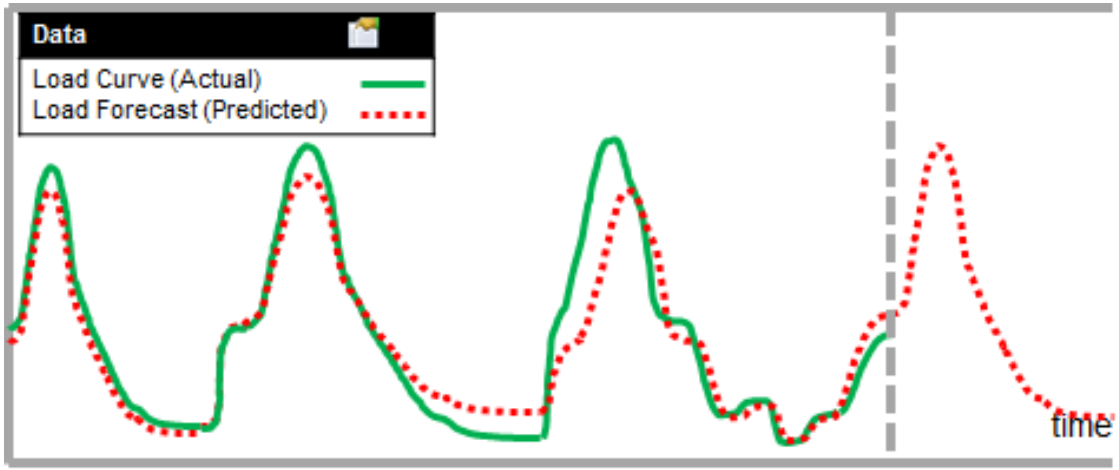
PI ProcessBook

PI DataLink

PI WebParts

PI Data Archive 2015

- Future Data



- PI Batch to PI Event Frames migration

Summary

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DECISION READY IN REAL-TIME

Unleash your PI System infrastructure with:

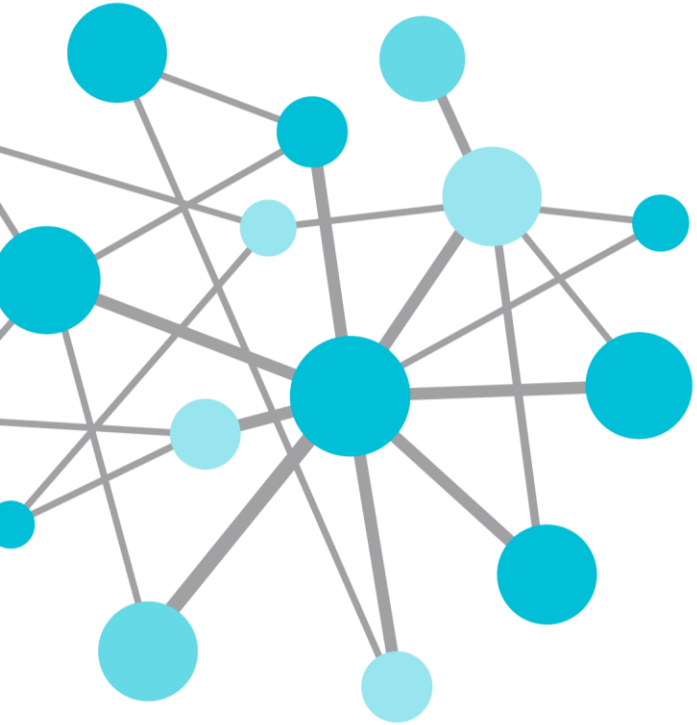
- PI AF to enable **asset insights**
- Calculations and analytics to **generate new insights**
- PI Event Frames to **accelerate decision making**
- PI Notifications to **deliver the right information**, at the right time, to the right people

Operational Excellence

Questions

Please wait for the microphone before asking your question

Please state your name and your company



THANK YOU

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